Operating instructions for sieving machine type AS300 control

Retsch®

Information on these operating instructions

The present operating instructions for the model AS300 control analytical sieving machine provide all the necessary information on the headings contained in the table of contents.
They act as a guide for the reader(s) defined for each topic necessary for safe use of the AS300 control in accordance with its intended purpose. Familiarity with the applicable chapters on the part of each target group of readers is essential for the safe and proper use of the equipment.
The present technical documentation has been designed for use both as a learning tool and a source of reference. Each chapter is a self-contained unit.
These operating instructions do not contain any instructions on repairs. Should repairs ever become necessary, please contact your supplier or talk directly to Retsch GmbH.

Safety

The AS300 control is a modern, high-performance product manufactured by Retsch GmbH. It incorporates the latest technology. It is entirely safe in operation when used for the intended purpose and in accordance with the present technical documentation.

Safety instructions

You, as the owner/operator must ensure that the persons who are entrusted to work with the AS300 control:

- have read and understood all the regulations contained in the chapter on safety,
- have made themselves familiar, prior to starting work, with all the operating instructions and regulations relevant to that particular target group,
- have complete, immediate and unrestricted access to the technical documentation for this machine,
- new personnel must have familiarised themselves with the safe use of the AS300 control and its intended purpose before starting work with the machine, either through verbal instruction by a competent person and / or with the help of the present technical documentation.
- Incorrect operation can result in injuries to persons and damage to property. You bear the responsibility for your own safety and that of the rest of your staff.
- Ensure that no unauthorised persons have access to the AS300 control.

  As a precaution, have your staff certify in writing that they have received instruction in the operation of the AS300 control. A draft for such a form can be found at the end of the chapter on safety.

We reject herewith any and all claims relating to personal injury or material damage which results from failure to comply with the following safety instructions.

Warnings

The following signs are used to warn of hazards:

Personal injuries

Material damage

Repairs

These operating instructions do not contain any repair instructions. In the interests of your own safety, repairs should only performed by Retsch GmbH or an authorised representative (service technician).

In this case, please notify the following:

Your local Retsch representative
Your supplier
Retsch GmbH direct

Your address for service:

Confirmation

I have read and understood the foreword and the chapter on safety.

_____

Signature of owner/operator

_____

Signature of service technician

Technical specifications

Machine designation:

AS300 control

Intended use

The AS300 control has been specially designed for analytical sieves with a diameter of 305 mm (12") to 315mm. This makes the available **sieving area 2.5 times greater** than sieves with a 200 mm diameter. The AS300 control thereby allows the average sieving times to be shortened.

A further benefit is the very **high working quantity** of material to be screened (6 kg) which can be separated in one work process. In case of frequently repeated sieve analyses made under the same conditions, work is considerably simplified by the option of **storing** up to **9 parameter combinations** direct in the sieving machine.

To ensure perfectly reproducible results, the AS300 control naturally allows the **power frequency independent control drive** to be specified instead of the vibration height. All sieving parameters are set, displayed and monitored digitally. The amplitude is regulated by a microprocessor-controlled **measurement control unit** and is automatically re-adjusted if the loading or voltage changes.

The AS300 control can naturally be **calibrated** and can be therefore deployed as test equipment for quality control action under DIN EN ISO 9000 ff. As with all "control" devices, the AS300 control also has an **integrated interface**.

The sieve can be actuated and adjusted by means of the **EasySieve®** evaluation software. EasySieve® displays all sieving parameters on the screen before and during the sieving process.

This machine is **not intended as a production machine** nor designed for continuous operation, but rather as laboratory equipment intended for one-shift, 8-hour per day operation.

The AS300 control is suitable for dry sieving of pourable, disperse products with an input grain of max. 40 mm.

Do not make any modifications to the machine and only use Retsch approved spares and accessories.

The conformity to the European guidelines declared by Retsch otherwise loses its validity.

It furthermore leads to the nullification of all warranty claims.

Emissions

Characteristic noise values :

Noise measurement according to DIN 45635-031-01-KL3
The characteristic noise values are determined primarily by the set amplitude width or sieve plate acceleration, the number of sieves deployed and the nature of the material to be screened.

Example :

Sound power level L_{WA} = 64 dB(A)
Workplace-related emission value L_{pAeq} = 59 dB(A)

Operating conditions :

Material to be screened = quartz sand, grain size <1mm, 5 sieves
Amplitude width = 1.5 mm

Maximum loading

Max. quantity of material to be screened = 6 kg
max. sieve stack mass = 10 kg

Protection systems

IP54 or IP20 around the sieve carrier passage

Equipment dimensions

Height: up to approx. 850 mm, Width: 400mm, Depth : 400mm
Weight: approx. 35 kg without sieve stack and without sieve clamping device

Base area required

400 mm x 400 mm; no safety clearances required.

Transport and assembly

Packaging

The packaging used is selected with the shipping mode in mind. It complies with the generally applicable packaging guidelines.

Please retain the packaging for the duration of the warranty since, in case of a complaint, returning in unsuitable packaging can jeopardize your warranty claims.

Transport

During transportation, do not subject the AS300 control to impacts, jolts or vibrations. The electronic and mechanical components could otherwise be damaged.

Temperature fluctuations

In case of wide temperature fluctuations (during shipment by air, for instance), protect the AS300 control from condensation. The electronic components could otherwise be damaged.

Intermediate storage

Ensure that the AS300 control is stored in a dry place, including intermediate storage.

Scope of supply

- AS300 control
- 2 power cables, Europe and USA
- 1 serial communication cable PC - AS 300
- 1 copy of the operating instructions

Check to ensure that the shipment is complete and includes any accessories you may have ordered separately.

Check that the AS300 control functions properly (see the chapter on operation in this regard).

If the shipment is incomplete or has suffered transport damage, you must notify the forwarder and Retsch GmbH immediately (within 24 hours). Under certain circumstances, claims lodged at a later date may not be considered valid.

Requirements for the assembly site

Ambient temperature :

5°C to 40°C

When the ambient temperature exceeds or falls below that specified, the electrical and mechanical components may be damaged, and performance data changed to an unknown extent.

Humidity :

Maximum relative humidity 80% at temperatures up to 31°C, linear decline down to 50% relative humidity at 40°C

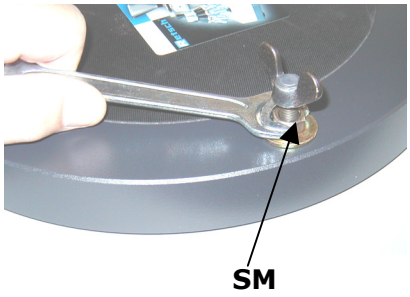
At a higher humidity, the electrical and mechanical components may be damaged, and performance data changed to an unknown extent.

Altitude of assembly site :

Max. 2000 m above sea level

Assembly / transport fastening

Install the AS300 only on a stable laboratory bench to avoid unpleasant transmission of vibrations.



- Undo the hex nut **SM** with an open-ended spanner until the sieve disk can be moved freely
- Undo the wing screws **A** (transport fastening) with hex nuts
- Install the appropriate sieve clamping unit
- Retain wing screws **A** with hex nuts (transport fastening) for transport at a later date.

Re-using the transport fasteners

- Screw the hex nuts fully onto the wing screws
- Screw the wing screw through the sieve disk into the housing
- Turn the hex nut downwards and tighten with an open-ended spanner until the sieve disk can no longer move

Mechanical components can be damaged if operated with the transport fasteners or transported without transport fasteners.

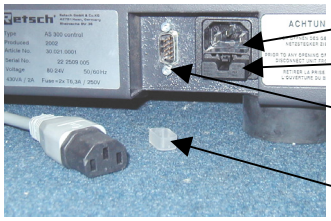
Electrical connection

- Refer to the data plate for the voltage and frequency at which the AS300 control is to be operated.
- Ensure that the values shown there correspond to those for the local power supply.
- Use the supplied power cord to connect the AS300 control to the power supply.
- When plugging the power cord into the power source, use an external fuse corresponding to the local regulations.

Failure to observe the values on the data plate can cause damage to the electrical and mechanical components.

Operation

Operating elements and their use

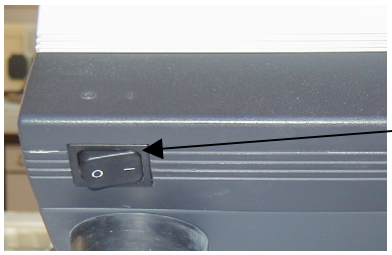


A Cold device plug combination

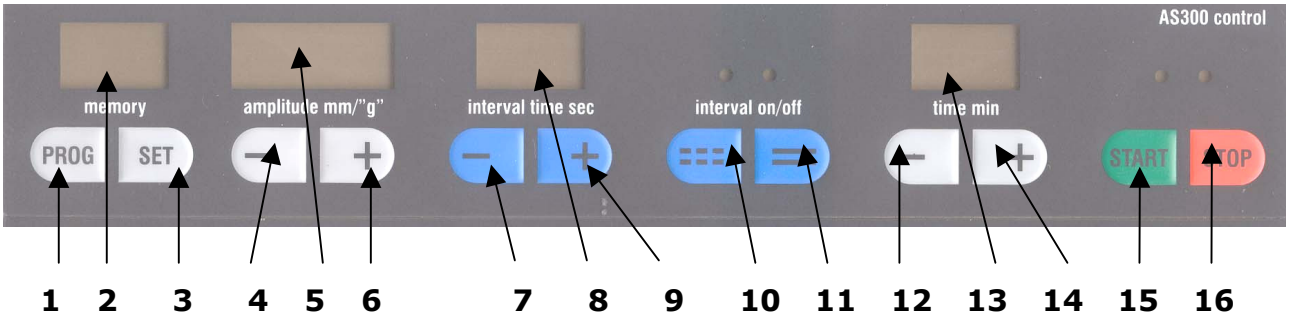
C Fuse drawer with glass fuses

B Serial connection

D Protective cap for the serial connection



E ON / OFF switch, left bottom



1	**PROG** – button for calling preset sieving parameters **P1-P9** or **on** and for ending programming without storing the parameters.
2	Display **memory** shows the selected programme **P1-P9** or **on**. If the AS 200 is driven by the EasySieve® softwear programme **ES** appears in the display.
3	**SET** – button for activating the setting mode for the preselected programme positions **P1-P9** and for storing the parameters after programming.
4	**—** button reduces the amplitude **0.20 – 2.20mm**, precision **±0.1mm,** or sieve bottom acceleration in **„g"**
5	Display **amplitude** shows the amplitude (2 x amplitude) of **0.20 – 2.20mm** or sieve bottom acceleration in **„g"**.
6	**+** button increases the amplitude, **0.20 – 2.20mm**, precision **±0.1mm,** or sieve bottom acceleration in **„g".**
7	**—** button reduces the interval time, **10 – 99sec.**
8	Display **interval** shows the preselected interval time, **10 – 99sec**.
9	**+** button increases the interval time, **10 – 99sec**.
10	Button switches interval operation **ON**, left LED lights up.
11	Button switchces interval operation **OFF,** right LED lights up.
12	**—** button reduces the sieving time, **1 – 99min**.
13	Display **time** shows the preselected sieving time, **1 – 99min**.
14	**+** button increases the sieving time, **1 – 99min**.
15	**START** button starts the sieving process and the green LED lights up.
16	**STOP** button stops and ends the sieving process and the red LED lights up.

Installing and tensioning the analytical sieves

The **AS400 control** is suitable for use with analytical sieves with outer diameters of 305-315mm.
Up to 8 analytical sieves plus base pan can be clamped in.
A clamping unit and cover are available for this purpose (see the accessories listing).

- Screw the threaded rods **H** into the sieve disk screws and lock with the hex nuts **I**.
- Center the selected sieve stack on the sieve disk
- Lay the clamping cover **F** over the threaded rods on the top sieve.
- Tilt the clamping nuts **G** to slide them over the stand thread and down to the clamping cover and fasten securely by hand.

We recommend the use of talcum powder if the base pan sticks to the smooth surface of the sieve carrier when removing the sieve stack.

Shorter rods for the sieve clamping unit are available for clamping in a maximum of 5 analytical sieves and a base pan (see accessories.

Operating the AS300 control

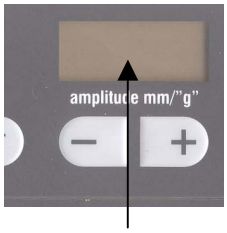
Switching on and off

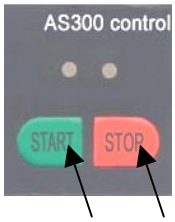
The main switch **E** is located at the left front of the **AS300 control** under the operating element.

- Turn the main switch on
- **On** illuminates in the **memory** display
- **1,00** illuminates in the **amplitude** display
- The **interval off** LED illuminates
- Two bars illuminate in the **time** display (**- -**)

The AS300 control is now ready for operation, without intermittent mode, in continuous duty, with a vibration height of 1.00mm.

Start - Interrupt - Stop





Start:

Press START / key **15**

- The green LED above key **15** illuminates
- Display **5** shows the run-up of the machine to the preset value.

During the sieving time, the vibration height or sieve plate acceleration are kept constant within the stipulated tolerances.

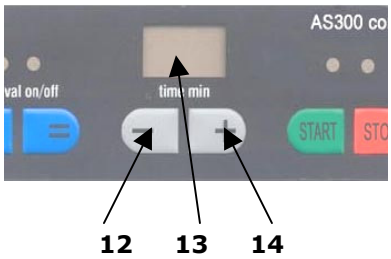
Interrupt (pause function) :

- Press STOP / key **16** once
- The red LED above key **16** illuminates
- The values remain visible
- Press START / key **15**
- The sieving process is resumed

Stop (standby function) :

- Press STOP / key **16** twice
- The red LED above key **16** illuminates
- The entire display goes out
- Activate the LED displays = press key **15** once
- New values can now be entered
- Press START / key **15** a 2nd time
- The function as with **Start** is executed.

Setting the time



When the **AS300 control** is switched on, the sieving time is still undetermined = 2 bars in display **13**.

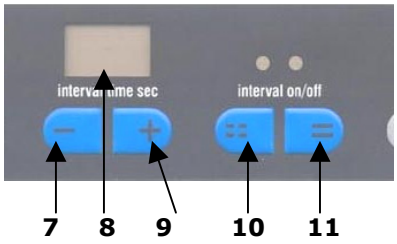
Switch on time 1 – 99 min. :

- Key **12** reduces the time down to 1 min.

if undershot, two bars appear = undetermined sieving time

- Key **14** increases the time up to 99 min.

if overshot, two bars appear = undetermined sieving time



Intermittent – continuous operation

When the **AS300 control** is switched on, intermittent operation is initially disabled.

Enabling intermittent mode of 10-99 sec. :

- Press key **10**
- The LED above key **10** illuminates
- Display **8** shows 10 sec.
- Pressing key **9** raises the interval period up to 99 sec.

If 99 sec is overshot, start again with 10 sec.

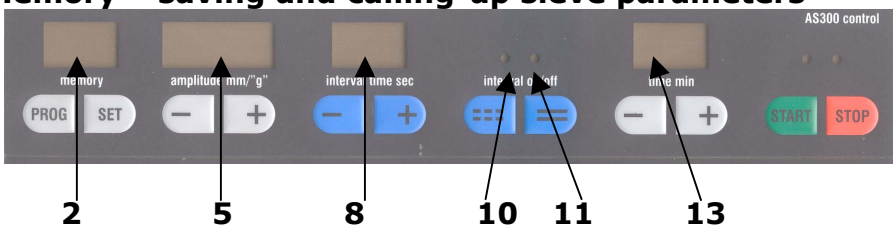
- Key **7** reduces the interval period down to 10 sec.

If 10 sec. is undershot, start again with 99 sec.

Disabling intermittent mode :

- Press key **11**
- The LED above key **11** illuminates
- Display **8** is extinguished

Memory – saving and calling-up sieve parameters



The memory function, thus saving or calling-up preselected sieve parameters, is only available in standby mode. You are able to change and overwrite program places **P1** to **P9** at any time.

After the **AS300 control** has been turned on, display **2** shows **"on"**. The next program place **P1** to **P9** is reached by pressing the **PROG** key. **on** reappears in the display after program place **P9**.

- **on** = the sieve parameters **5/8/10-11** and **13** can be freely set here.

or

- **P1** to **P9** = sieve parameters can be stored and called-up here
- **Start** = sieving process is started with the sieve parameters stored in program place **P1** to **P9**.

Occupying storage space

- Press the **PROG** key until the required storage place **P1**-**P9** has been reached.
- Press the **SET** key, all displays flash
- Set sieve parameter **5/8/10-11/13**

The programming mode can be aborted by pressing the **PROG** button – the values are not stored.

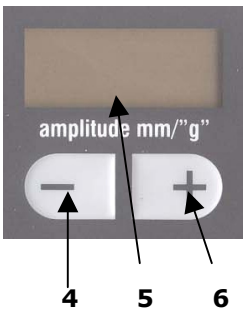
- Press **SET** button – the values are stored

Flashing of the display stops, the adjusting interlock is activated, the sieving parameters are stored.

If the **AS300 control** is actuated with a PC and the **"EasySieve®"** sieve software, display **2** shows **"ES"**. No manual changes to the sieve parameters are possible in this mode.

Vibration height in "mm"

A value twice the amplitude is shown as the measured value in display **5** marked **amplitude**. We refer to this measured value throughout these instructions as the **vibration height**.
When the **AS300 control** is switched on, the vibration height is preset to 1.00 mm.



Setting the vibration height from 0.20 – 2.20mm :

Reduce :

- Key **4** reduces the vibration height down to 0.20 mm
- Hold down key **4**, after 5 sec. the rapid adjustment function will commence

If 0.20 mm is undershot, 2.20 mm appears again

Increase :

- Key **6** increase the vibration height up to 2.20 mm
- Hold down **6,** after 5 sec. the rapid adjustment function will commence

If 2.20 mm is overshot, 0.20mm appears again

Sieve plate acceleration in "g"

When the **AS300 control** is switched on, the vibration height is preset to 1.00 mm and can be switched to sieve plate acceleration mode by simultaneously pressing and holding down

- **keys 4+6** for **2s**

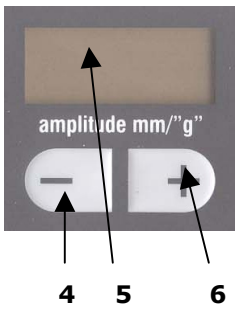
After switchover, display **5** still does not show any values, this only happens after the **START** has been pressed.

The display **5** marked as **amplitude mm** will show a multiple of the Earth's gravity "g" as the measured value.

(1g = 9,81m/s^2)

Setting the sieve plate acceleration in "g" from 1 – approx.17g

Naturally, your **AS300 control** can only achieve the sieve plate acceleration at which, in dependence on the inherent frequency, an amplitude of 2.2 mm is not overshot.



Reduce :

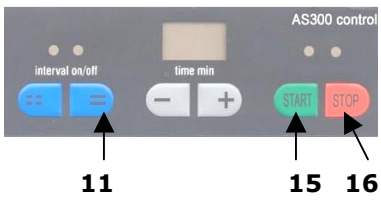
- Key **4** reduces the sieve plate acceleration down to 1g
- Hold down key **4**, after 5 sec. the rapid adjustment function will commence

Increase :

- Key **6** increase the sieve plate acceleration up to approx. 17g
- Hold down **6,** after 5 sec. the rapid adjustment function will commence

Signal tone for the end of sieving

If the sieving process runs to the end without interruption, the end is then signalled by an acoustic tone sounding 5 times.



Disabling the signal tone :

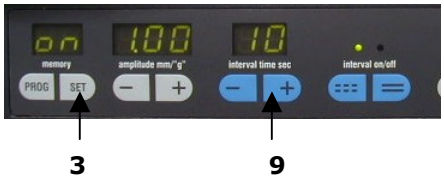
- Press keys **11** and **16** simultaneously

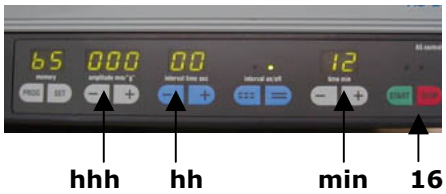
confirmed by a signal.

Enabling the signal tone :

- Press keys **11** and **15** simultaneously

confirmed by a signal.





Operating hours display

If the buttons described below are pressed, the complete running time of the machine in hours and minutes can be displayed.

Displaying the operating hours:

- Press buttons **3** and **9** simultaneously and keep pressed
  The indication **"bS"** appears in the „**memory**" display.

Passing out of the operating hours:

- Press button **16, STOP.**

Information on "memory" display

The following abbreviations can appear:

Display	**Description**	**Button combinations**
on	Normal mode – all parameters can be adjusted – also during sieving.	
P1 – P9	Calling and indication of stored programmes.	Press button „**PROG**"
ES	Operation with software **EasySieve®**	Automatic when starting from **EasySieve®**
bS	Operating hours display	Button combination "SET" and interval time „+"
S	Softwear version display	Button combination "SET" and interval time „ - "

Information on sieve plate acceleration mode

The **AS300 control** is a throw sieve which allows you to set both the **amplitude** and the **sieve plate acceleration** as sieving parameters.

Throw sieves such as the **AS300 control** are generally based on a spring/mass system which is exited in inherent frequency. This means that in contrast to machines exited at mains power frequency which always oscillate at 50 or 60 Hz, varying sieve frequencies set in here when loaded with different numbers of sieves and sieve weights. However, the spring/mass system has been designed in such a way that the inherent frequency range is always kept somewhere near 50 and 60 Hz.

As long as sieve analyses are only to be compared with each other or reproduced within the respective inherent frequency ranges, setting the same **amplitudes** and sieving times will naturally produce comparable results.

However, the increasing globalisation of production processes nowadays often requires sieve analyses made in both mains power frequency ranges 50/60Hz to be compared with each other, and naturally also with the results of your **AS300 control** exited at inherent frequency. Even if these sieve analyses are conducted with the same amplitude and sieving time, the disparate sieve frequencies are likely to adversely affect the comparability of results at reasonably short sieving times.

The reason for these differences lies in the fact that the essential parameter in throw sieve analyses is not amplitude, but rather the **sieve plate** acceleration, which is crucially influenced by **frequency** as well as amplitude. Provided that sieving is only carried out at the same frequency, e.g. with the same mains power frequency, varying the amplitude is naturally the only means of varying the **sieve plate acceleration**!
In order to take account of these physical facts, your new **AS300 control** enables not only the amplitude to be set, displayed and regulated, but also the **sieve plate acceleration.**
The **sieve plate acceleration** is shown as a multiple of the Earth's gravity "g" (1g = 9.81 m/s^2). The functional principle is based on our German patent No. 19 522 987.
See the chapter on **"Operating the AS300 control"** and the paragraph **"Sieve plate acceleration"** for more details on operation.

Comparative sieve analyses in acceleration mode with direct infeed nevertheless require that the **sieve plate acceleration** of the comparative machine (e.g. a AS200 control or another AS300 control) is known.

If the **sieve plate acceleration** is unknown, our **EasySieve^R** evaluation software enables you to input comparative data both much more simply and in a greater scope, thus, for example, there is also the option of **time correction**.

Time correction

Our investigations have shown that the switch to specifying the **sieve plate acceleration** instead of the **amplitude** is the most significant influencing variable when sieving at varying frequencies. Nevertheless, it is clear that an equal sieving time at 60Hz will involve 20% more sieve strokes than at 50Hz, which basically is on a par with an extension to the sieving time. Especially when short sieving times are selected, we accordingly recommend that the sieving time is corrected with the help of **EasySieve®**

Acceleration guidelines

The relevant specialist textbooks, e.g. "Zerkleinerungs- und Klassiermaschinen" (Crushers and Classifiers) by Prof. Dr. Karl Höffl, designate sieve plate acceleration in "g" with the letter **K** and describe the relationship between this and the sieving effect as follows:

K („g")	Movement of charge	Sieve performance	Associated amplitude at 50 Hz	Associated amplitude at 60 Hz
1,0	No throw, flow or slip	Very sluggish, sieve plate clogs up quickly	0.2 mm	0.14 mm
1,5	Gradual lift	Sluggish, sieve plate clogs up slowly	0.3 mm	0.21mm
1,8	Very flat throw	Very gentle action for material which is easy to screen	0.36 mm	0.25mm
2,3	Flat to slightly steep throw	Gentle action for material which is less easy to screen	0.46 mm	0.32mm
3,5	Steep throw	Brisk action	0.7 mm	0.5 mm
4	Very steep throw	Very brisk action with strong separation	0.8 mm	0.55 mm

We have added the last two columns to show the associated amplitudes for the two most common mains power frequencies in the world.

These particulars should only be regarded as rough values applicable to small charges, when the material to be screened can generally move around the sieve plate as discrete grains due to its distribution.

In the laboratory, however, the pulse transmitted by the sieve plate are usually muffled by thick layers of charge and the sieve plate of the analytic sieve itself vibrates. Accordingly, higher K-factors are required in everyday laboratory practice than those resulting from the dynamics of individual grains. Thus for everyday practice, the aforesaid recommendations need to be multiplied by a factor of **1.5 - 2**.

Retsch Analytical sieves

The highest precision for exact results

The accuracy and the reliability of the analysis result are decisively dependent not only on the sieving machine delivering reproducible results, but also on the quality of the analytical sieves.

Retsch analytical sieves are high quality measuring instruments for which only the fabrics and screens which comply with the relevant standards are used.

Analytical sieves with 305 (12") and 315mmØ

- Sieve plates, frame and labelling executed in compliance with standards
- Tested 5-times with quality certification to DIN ISO, ASTM, BS
- On request, with an individual test certificate for control of test and measuring equipment as per ISO 9000 ff
- Sieve plates made of non-rusting wire mesh fabric, 20µm to 125mm
- Also available in round or square perforated sheet

Sieve accessories

There are base pans, base pans with discharge, intermediate pans, intermediate rings and sieve covers available which are compatible with the different analytical sieves. Sieving aids and sieve stands complete the range of accessories.

Please refer to our price list for details on how to order the analytical sieves and the other available accessories.

Tested quality – black on white

RETSCH certificates

Before being delivered, each sieve is optically gauged and provided with a **works' certificate**.

On request, you receive a protocol with the **acceptance test certificate** which documents the measurement results in tabular form and in graphics, or a **calibration certificate** with more detailed statistics.

Calibration service

As a special service we offer to calibrate your analytical sieve. In doing so, we record all the relevant information for the sieve according to standardised gauging methods, and confirm these in the requested **certificate**.

Working instructions

Sieving aids

When dealing with material that is difficult to separate, we recommend the additional use of sieving aids in the individual sieve fractions. Depending on the width of the sieve meshing and the preselected vibration intensity, pearls made of agate, rubber, porcelain or nylon bristles and Vulkollan cubes may be used. Also refer to the table below.

Ensure that the fabric of the sieve is not overstretched by overloading with sieving aids as this would have a detrimental effect on the precision of your analytical sieve.

Overview table

Sieving aids	Quantity per sieve or charge	Supplier	Area of use	Caution !!
Rubber pearls	5 pcs, Ø20 mm	RETSCH, Haan	Materials to be screened are fine, dry, difficult to separate and throw sieves are used	When using mechanical sieving aids, there is the danger that soft materials can disintegrate and fine sieve fabrics can be damaged!
Agate pearls	10 pcs, Ø10 mm	RETSCH, Haan		
Hard porcelain pearls	approx. 10gr., Ø2 mm	RETSCH, Haan		
Vulkollan cubes	5 pcs, 12x12	RETSCH, Haan	Planetary sieving machines	
Bristles	3 pcs	RETSCH, Haan		
Plastic rings	3 pcs, various Ø			
Brushes			Manual sieving	
Highly dispersed silicic acids	0.5 to 2%	Degussa, Ffm	Materials to be screened are fine, sticky, fatty and electrostatically charged	Check applicability and compatibility before adding!
- " - Aluminium oxide	0.5 to 1%	Degussa, Ffm		
- " - active carbon				
- " - talcum			Latex and rubber powder	
Remove grease			Materials to be screened are very fatty	The granularity of the material to be screened may not be altered by the solvent used to remove grease or by the temperature and air used in drying.
Dry			Materials to be screened are very wet or damp	
Guide dry, warm air through the sieve set			Hygroscopic materials to be screened	
Cleanse with steam			Materials to be screened are coarse and electrostatically charged	
First sieve of the fine sieve then the coarse sieve			If contamination from other mechanical aids, such as rubber pearls, is to be avoided	The coarse material functions like a mechanical sieving aid (pearls) on the fine sieves.
Intermittent sieving		RETSCH, Haan	Materials to be screened are fine, stick easily, or only fall through the mesh with difficulty	Intermittent switching is built into the majority of throw sieves and can be switched on, if required.

Sieving material quantities

The sieve stack required for sieve analyses is composed of analytical sieves arranged one above the other, with progressively larger holes towards the top, plus the base pan.

To ensure fast separation with exact results, the quantity of the material to be screened should be adapted to the sieve diameter and the nominal size of the openings.
The relevant standards on sieve analysis state guideline values in this context.

In the case of sieving processes with only 1 to 3 sieves, we recommend the use of short threaded rods (available as accessories).
Overly long, protruding rods interfere with the material to be screened due to their inherent vibration characteristics.

Wet sieving

Target group: Owner, operator

Dry sieving will be possible in the large majority of cases. There are, however, some materials in which the adhesive forces between the individual particles can cause difficulties. These problems can be eliminated by adding liquid, preferably water, during the sieving operation (in so far as the additives mentioned in the chapter on "sieving aids" were not successful). One pre-condition for wet sieving, however, is that the substances to be separated will not swell, dissolve or otherwise interact with the liquid.

Required accessories

- Clamping cover with spray nozzle, matching the sieve diameter.
- Base pan with water drain, matching the sieve diameter.

Preparations

- Position your AS200 control "g" near a water drain.
- Use a hose to connect the spray nozzle in the clamping cover to a water faucet.
- Connect the drain from the base pan with the drain or a suitable container to receive the liquid.

Operation

- Apply the solid in the form of a suspension.
- Set the liquid (water) supply rate so that the spray just covers the sieve surface completely.
- Using dispersion agents is advisable. They reduce the surface tension of the sieve liquids.
- When dealing with goods which resist forming a slurry or where more exact separation is required, spray each individual fraction, one after the other.
- Following the sieving process, the fractions are to be transferred from the individual sieves to suitable filters (*e.g.* filter paper) and dried in a drying cabinet at 80°C.
- Then clean the sieves in an ultrasonic bath and dry them, too, in the drying cabinet (without the gaskets).
- Do not exceed a maximum drying temperature of 80°C.

Never place the AS200 control "g" directly in a basin for operation.
Fatal electrical shock hazard.

During wet sieving always connect the AS200 control "g" to a socket which is protected by a ground fault interrupter.

Adjust the volume of water applied so that it will just wet the surface of the screen.

Water backing up in the sieve stack can cause overloading and thus may damage or destroy the sieve weave.

The **loading capacity charts** provided in the Appendix to these operating instructions are **not applicable** to wet sieving.

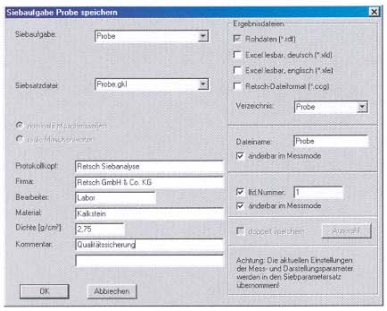
Due to the difficulty in defining the volume of water in the sieve stack, it is impossible to make reliable statements for wet sieving.

EasySieve®

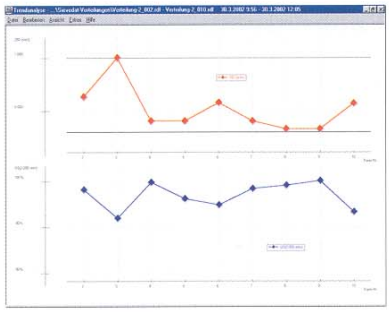
Control, evaluation, documentation.

EasySieve®, the software package from RETSCH for grain size analysis, is superior to manual evaluation in many respects. This is because the software is able to perform the required measuring and weighing processes automatically – from determining the weights of the sieves to evaluating the data. And in a much more simple and comfortable manner – thus making life easier.

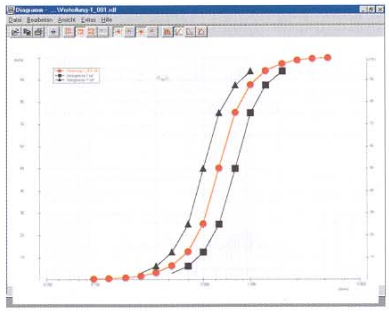
The software is structured in a self-explanatory way and follows the logical chain of events involved in analysing grain sizes. This makes it possible to use it with confidence in a fairly short time. The multiplicity of evaluation options additionally provides the utmost flexibility in adapting to demanding, individual applications.



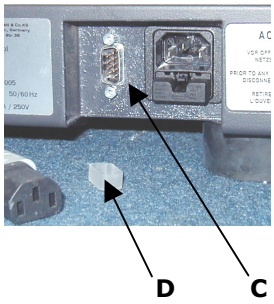
Parameter input specification limits



Trend analysis of product processes



Comparison with



Serial PC connection

The **AS300 control** can be connected to the serial interface of a personal computer for the purpose and transmitting and receiving data. This is done with the normal 9 pole RS232 cable supplied as standard with the **AS300 control**. This makes it possible to communicate with the **EasySieve®** evaluation software available as an accessory.

- Remove cap **D**, if the port is not used, this protects it from dust and moisture
- Connect one end of the serial cable to **C** and the other to the PC

General

Cleaning

For thorough, gentle and time-saving cleaning of your analytical sieves, we recommend the Retsch ultrasonic baths.
Ask for our special publication "Care and cleaning of analytical sieves" free-of-charge.

Do not clean the **AS300 control** with running water.
Danger to life from electrical shock

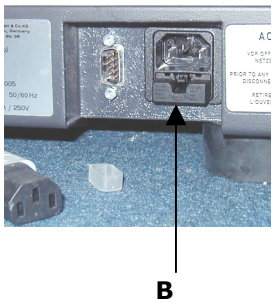
Only use a rag moistened with water.
Never use solvents.

Maintenance

If you use your AS300 control for quality control purposes, it should then be calibrated regularly in accordance with DIN EN ISO 9000 ff. In this context, please contact or your dealer or speak directly to Retsch GmbH.
Otherwise the **AS300 control** is virtually maintenance-free.

Replacing fuses

Two glass fuses SPT 6.3A (5x20mm) are required.



- Unplug the power at the socket
- Pull out fuse holder **B**
- Exchange the fuse
- Re-insert fuse holder **B**

Accessories

- Sieve clamping unit standard for analytical sieves 305mm (12")
- Standard sieve set 305mm (12") 50mm high, consisting of 7 analytical sieves to DIN 3310/1 0.63 + 1.25 + 2.5 + 5 + 10 + 20 and 31.5mm plus base pan
- Standard sieve set 305mm (12") 50mm high, consisting of 7 analytical sieves to ASTM 30 + 16 + 8 + 4 mesh + 3/8" + 3/4" and 1 1/4" plus base pan
- Software EasySieve

Copyright

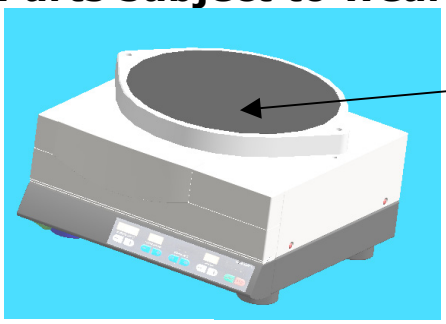
Safety regulations (table) for the AS300 control **from the chapters**

Process	Action	Hazards
Safety	Non-compliance with safety instructions leads to material damage and injuries to people	Any and all claims to damages are excluded
Packaging	Retain the packaging until the warranty time has elapsed	Your warranty claim can be threatened in case of complaint if a part is returned in inadequate packaging
Transport	Do not subject the AS 300 control to impacts, jolts or vibrations during transport	Electronic and mechanical components can be damaged
Temperature fluctuations	In case of temperature fluctuations, protect the AS 300 control from condensation	Electronic components can be damaged
Scope of supply	If the shipment is incomplete and / or it has been damaged during transport, you must notify the forwarder and Retsch GmbH immediately (within 24 hours).	Under certain circumstances later complaints may not be considered.
Ambient temperature	Below 5°C Above 40°C	Electronic and mechanical components can be damaged. Performance data can be changed to an unknown extent.
Humidity	Above 80% at temperatures of up to 31°C	Electronic and mechanical components can be damaged. Performance data can be changed to an unknown extent.
Transport fastening	Remove transport fasteners before start up. Secure the machine with transport fasteners during transport.	Mechanical parts can be damaged if operated **with** transport fasteners or transporting **without** transport fasteners.
Electrical connection	Power system does not agree with the values stated on the data plate	Electronic components can be damaged
Cleaning	Unplug the power at the socket each time before cleaning. Never clean with running water	**Danger to life from electric shocks** **Danger to life from electric shocks**

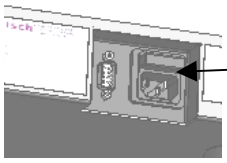
Changes

Technical changes are reserved.

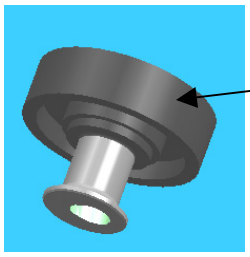
Parts subject to wear and tear



Item 11 / Art. No. 03.243.0052
1x rubber disk



Item 37 / Art. No. 05.699.0075
2x fuse insert



Item 701.2 / Art. No. 03.070.0029
2x tightening nut M12

These operating instructions do not contain any repair instructions. In the interests of your own safety, repairs should only performed by Retsch GmbH or an authorised representative (service technician).

Warranty conditions

1. In the case of justified complaints, we will remedy the defect or replace the goods free of charge.

   The purchaser only has a right to rescind the contract or reduce the purchase price if we have decided that it is not possible or justifiable to remedy the defect, or a replacement delivery cannot be made or the deadline for this cannot be met, or a reasonable period of grace of at least six weeks set by the customer has expired fruitlessly due to our culpability.

   If the remedial work or the replacement delivery ultimately fail, the customer can demand a reduction in the purchase price or rescind the contract at its discretion. Further-going claims, in particular claims for damages not incurred on the object itself, such as lost production, are excluded insofar as we have been guilty of neither malice aforethought nor negligence. In the case of goods produced by third parties, we pass liability on to the manufacturer(s).

2. We shall bear the direct costs incurred by remedial work or replacement deliveries on the condition that the complaint turns out to be justified. This also applies to the freight costs as well as the costs, within reason, of disassembly and re-assembly. The customer is nevertheless obliged to bear the costs, within reason, of providing its own technicians and assistants on site. If our customer operates abroad, then in deviation to this, we are entitled to pay the costs incurred by the remedial work, in particular costs of transport, tolls and materials, ex German border.

3. The warranty term for newly manufactured goods is two years, for used it is one year.

   The guarantee refers to deployment in a laboratory in 1-shift operation. In case of multi-shift operation or other areas of application, the guarantee term is shortened accordingly.

   No warranty is given for parts subject to wear and tear.

4. We guarantee that our goods are free from manufacturing defects. The suitability, classification and function of our goods are determined exclusively on the basis of the performance data specified in the confirmation of order, even if these differ from the order. Should this be the case, the customer may, within two weeks of receiving the order confirmation, notify us of any differences to the order and come to an agreement on these with us. If the customer raises no objections to the specifications in the order confirmation, these are then deemed to have been accepted.

   Unless an agreement has been made to the contrary, we are not liable for the suitability of the object of delivery for the use to which the customer intends to put them. The same applies to performance data expected by the customer, unless we have been able to carry out appropriate practical laboratory trials in advance, and have declared in writing in our order confirmation that such performance data are binding.

5. Our warranty is also invalidated if persons other than those commissioned by us perform repair work or in any other way interfere with or make alterations to the goods delivered by us, or do not use suitable accessories, insofar as the cause of a defected is connected to these. A further pre-condition for our warranty is compliance with our instructions of operation and use.

6. If the customer installs the goods and/or connects, attaches or incorporates these to other systems or production plant without our prior approval, our warranty is then exclusively restricted to the parts delivered by us.

7. Remedial work on or replacement of defective parts shall take place, at our discretion, either at the place where the object of purchase is installed, or at our company's headquarters. If remedial work is performed on site, the customer shall ensure that our staff has access, unlimited either in time or space, to the object of purchase. In addition, the customer can only demand that the warranty work be performed during normal local business hours. If the customer requests that warranty work be carried out at times outside our normal business hours, it shall then bear the additional costs. If the customer requests other particular services which go beyond the warranty work, these costs are then payable at our current rates.